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A NEW SPECIES OF PASSERINE BIRD
FROM THE
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By HILDEGARDE HOWARD



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HILDEGARDE HOWARD

Chief Curator of Science

EDITOR

A NEW SPECIES OF PASSERINE BIRD FROM THE MIOCENE OF CALIFORNIA

By HILDEGARDE HOWARD*

INTRODUCTION

In 1955, the Los Angeles County Museum acquired two rock slabs containing obverse and reverse impressions (with some bone still present) of the nearly complete skeleton of a Miocene fossil bird. The slabs were originally purchased as flagstones by Mr. Edward H. Metcalf of Pasadena, who realized their significance and presented them to Dr. Dale Arvey of Long Beach State College. Dr. Arvey recognized that the bird represented on the slabs would require considerable study. As the Los Angeles County Museum has long specialized in research in fossil birds, he contacted the museum and an exchange was effected to the mutual advantage of the two institutions.

By contacting the vendor of the flagstones, the quarry from which they came was located approximately ten miles east of the town of Santa Maria, in the San Rafael mountains, Santa Barbara County, California. It is operated by G. Antolini and Sons. According to Dr. Raymond Barber, late Curator of Mineralogy and Petrology of the Los Angeles County Museum, the rock in which the fossil lies is a siliceous limestone. The matrix was analyzed for possible microfossils by Mr. Harry Turver of the Standard Oil Company. He established the deposit as of the Monterey Formation, middle Miocene (Mohnian) in age, but found no evidence of either foraminifera or diatoms. Other fossil specimens from the area have been collected by the Santa Barbara Museum of Natural History and include fish, porpoise, palm and two species of marine birds: a shearwater (*Puffinus*, sp.) and a new species, *Osteodontornis orri* Howard (1957), assigned to an extinct order, Odontopterygiformes.

I should like to take this opportunity to express my appreciation of the understanding generosity and cooperation of Mr. Metcalf and Dr. Arvey. I wish also gratefully to acknowledge the assistance of Dr. Jean Delacour, Director of the Los Angeles County Museum, in taxonomic problems involving living birds. My thanks are extended to Dr. Herbert Friedmann of the United States National Museum, Dr. Dean Amadon of the American Museum of Natural History, and Dr. Alden H. Miller of the California Museum of Vertebrate Zoology for the loan of modern skeletal material for comparison.

*Chief Curator, Division of Science, Los Angeles County Museum.

DESCRIPTION

The larger of the two flagstones (slab no. 1) measures 19 x 12 inches and is 7½ inches thick. The smaller (slab no. 2) is of uneven surface dimensions; the greatest length and breadth are approximately 14½ and 7½ inches respectively, and the thickness 1¼ inches.

The major part of the skeleton of the fossil bird is represented by impression and some actual bone on slab no. 1. The skull and body parts, disarranged but not completely disassociated, extend approximately 6¼ inches along the surface of the slab. A number of tracheal rings are scattered in the matrix below the skull. The leg bones and pelvis lie about two inches posterior to the other body parts. Slab no. 2 has been broken just at the tip of the furcula, and the portion bearing the sternum and legs is not present. By faint impression and discoloration, the outline and partial feather venation of one wing are apparent on this small slab. Areas of faint discoloration around the body and individual bones indicate chemical reaction from the flesh in the process of disintegration. Detailed characters of the articular ends of the individual skeletal elements are indistinct on both slabs.

A good endocranial cast of the right side of the head and a fragment of the bony cranium are exposed on slab no. 2, a poor impression of endocranium on no. 1. The upper and lower mandibles are better delineated on the latter, the upper by impression, the lower by bone exposed in the matrix. The outline of the external naris of the right side is preserved. The sternum is represented by the clear impression of the left side of the carina and manubrium; the actual bone of the left posterior lateral process and the portion of the xiphisternum bordering the sternal notch have been exposed by preparation. The outline of the furcula is impressed on both slabs, and the internal surface of the bone is exposed at the upper end of the right clavicle on no. 2. The upper half of the anterior face of the right coracoid, and the dorsal surface of the right scapula have been exposed by preparation on this slab. Parts of broken bone lie in the impression of the left coracoid. The left scapula is poorly indicated on either slab.

Both right and left humeri are present. On slab no. 2 the right lies with the anconal surface of the entepicondyle of the distal end exposed by preparation, and the contours of the palmar side of the proximal end impressed in the matrix; an impression of the anconal surface of the proximal end appears on slab no. 1. The left humerus lies on the small slab with the palmar surface of the external condyle of the distal end exposed by preparation, and the contours of the anconal side of the

proximal end impressed in the matrix; the impression of the palmar side of the proximal end appears on the large slab. The position of both bones is such that the ectepicondylar prominence is buried in the matrix. The impression of the internal side of the left ulna is fairly well marked on slab no. 2. A cast made from this impression reveals quite clearly the impression of the brachialis anticus muscle near the proximal end. The impression of the external side of the ulna is deeply cut on slab no. 1, but a cast from this reveals no details. The right ulna is imperfectly impressed on both slabs. The radius is represented by impression of actual bone of both left and right sides on the small slab, and by impression only, on the large. The right carpometacarpus lies 3 inches apart from the body, and above the skull; it is represented in slab no. 2 by the actual bone of the external side of the distal tip and part of the shaft of metacarpal 3, together with the impression of the internal side of metacarpal 2 and the head; the impression is somewhat altered by the presence of fragments of bone within it; on slab no. 1, the bone of the process of metacarpal 2 is still adhering to the impression of the external side of this metacarpal. The left carpometacarpus is poorly impressed on the small slab, but on no. 1 the bone of the external side of the distal end of metacarpal 3 is preserved, as well as the impression of the internal side of the remainder of the element, with fragments of bone adhering. The phalanx of alar digit 3 and both phalanges of digit 2 are represented; there is no evidence of digit 1.

As stated above, the pelvis and leg bones are represented only on the large slab. The pelvis appears as an imperfect impression of the dorsal surface. The anterior end is incomplete, obliterated by the right femur which lies across it. The right leg is represented by the external impression of the femur, tibiotarsus and tarsometatarsus, with digits 1, 3 and 4 in place (the ungual of digit 3 is missing). The left leg is represented by the external impression of the femur and anterior impression of tibiotarsus with fibula, approximately in place; the left tarsometatarsus, however, is separated and lies below the right tarsometatarsus with its internal side impressed; metatarsal 1 and digits 1, 2, and 3 are present and approximately normally placed (the unguals for digits 1 and 3 are missing).

As the deposit in which this fossil was found is marine, it would be natural to suppose that the bird here entombed was a small sea bird, such as a petrel, or even one of the smaller shorebirds. Careful scrutiny of the specimen, however, indicates that relationship lies rather with the perching birds, Order Passeriformes, and with the suborder Oscines (Passeres).

The fossil was compared with available skeletons of all living and fossil passerines that seemed possibly to bear any resemblance. These represented 59 species, 53 genera and over 20 families. The Miocene bird was found to be distinct, both generically and specifically, from all forms compared. It is accordingly here described as new to science. The relationships of this extinct bird can be better discussed following its description.

***Palaeoscinis turdirostris** new genus and species**

Figures 1 and 2

Type. — L. A. County Mus. no. 2604; nearly complete skeleton and outlines of a portion of the feathering of one wing, represented by impression and parts of actual bone on two flagstone slabs.

Locality and age. — L. A. County Mus. Vert. Paleon. loc. no. 1127; Tepusquet Peak Quadrangle, 1942 ed.; T 10 N, R 31 W, NE¼ of NW¼, Sect. 15; west side Tepusquet Creek S 25° E of Los Coches mountain, N 45° W of Tepusquet Peak. Middle Miocene (Mohnian).

Diagnosis. — Upper mandible long and slender with large, oval external nares; sternum with long, slender, upcurved manubrium, and short sternal notch bordered by broad posterior lateral process; blade of scapula broad; humerus lacking deep undercut below head; skeleton of leg (excluding toes) 90 per cent of length of wing skeleton, including phalanges 1 and 2 of alar digit 2; tarsometatarsus shorter than humerus or femur, and femur approximately $\frac{2}{3}$ the length of tibiotarsus; ungual of first pedal digit very long; middle toe longest of pedal digits, first and fourth approximately identical in length, second digit shortest.

Detailed description. — **SKULL AND MANDIBLE:** Brain well developed; upper mandible 49 per cent of total skull length; external nares occupying 40 per cent of total rostral length; lower mandible slender, symphysis approximately 25 per cent of total mandibular length and marked centrally for about half its length with a distinct groove; rami only moderately angled (slightly forward of midpoint, anteroposteriorly). Bill similar to that of *Ixoreus naevius* in proportions, position of nares, angle of lower mandible and groove in symphysis.

STERNUM: Height of carina approximately 37 per cent of length of sternum; manubrium long, slender and upcurved; anterior border of carina nearly straight; sternal notch 34 per cent of length of sternum (from xiphisternum to base of manubrium dorsally), and bordered by broad posterior lateral process.

*The scientific name indicates that the fossil is an ancient oscine bird with a thrushlike beak.

Fig. 1. *Palaeoscinis turdirostris*, new species. Type slab no. 1. Approximately natural size. ◇



FURCULA: Relatively long and narrow with slender symphysis; furcular process long and slender, but details of shape not discernible.

CORACOID: General shape and slenderness similar to condition found in Oscines; no other diagnostic characters noted.

SCAPULA: Blade broad and flat near articular end, equalling or even exceeding depth of shaft of ulna; blade becoming broadly depressed as it continues distally.

HUMERUS: Pectoral crest extending distally well below level of bicapital crest and (as viewed anconally) depressed in middle, flaring slightly proximally and distally; head bent anconally and towards internal crest so that proximal end of pectoral crest is high with respect to head; apex of shaft angular near proximal end (anconally); anconal surface of proximal end depressed internally adjacent to median crest but not deeply undercut beneath head; diagnostic characters of distal end not visible, except entepicondyle prominently developed as in the Passeriformes.

ULNA: Size and proportions similar to those of *Ixoreus naevius* and *Microscelis leucocephalus*; bone shorter, stouter and with more circumscribed impression of brachialis anticus muscle than in *Tyrannus verticalis*; no diagnostic characters of value within the suborder Oscines notable.

RADIUS: Undiagnostic.

CARPOMETACARPUS: Distal end of metacarpal 3 extending well distal to metacarpal 2 with essentially straight contours, as in the Oscines.

PHALANX 1, ALAR DIGIT 2: Slender and straight in contours, in contrast to condition found in the Tyranni, where bone is flared.

WING FEATHERS: Length of feather impressions $4\frac{1}{4}$ - $4\frac{3}{8}$ inches; impossible to ascertain whether or not impressions represent full length of wing; if they do, wing is short for size of skeleton.

PELVIS: Iliia separate anteriorly as well as posteriorly and their borders appearing to converge anteriorly (may be illusion owing to imperfect impression); posterior ilia protruding distally, forming marked points at their external margins; sacrum broad, greatest breadth equal to more than half of greatest breadth of pelvis across posterior ilia; central raised area of sacrum bulbous and broad anteriorly, tapering and flattened posteriorly. Great breadth of sacrum most closely paralleled in Turdidae and Pycnonotidae; characters of central raised area suggestive of *Cinclus* and *Aphelocoma*.

Fig. 2. *Palaeoscinis turdirostris*, new species. Type slab no. 2. Natural size.





TABLE I

Palaeoscinis turdirostris compared with selected living and extinct avian species

Measurements in Millimeters

	<i>Palaeoscinis turdirostris</i>	<i>Microscelis leucocephalus</i>	<i>Bombycilla cedrorum</i>	<i>Aphelocoma californica</i>	<i>Cinclus mexicanus</i>	<i>Ixoreus naevius</i>	<i>Paleospiza bella</i> *	<i>Laurillardia longirostris</i> *
Length of skull	48.3	47.1	32.7	55.2	44.8	46.7	.....	43
Length of beak	23.7	24.7	13.2	26.0	21.2	22.3	.....	22
Length of sternum	25.5	25.5	20.3	24.0	24.7	28.7	.....	....
Length, posterior sternal notch	8.7	11.8	8.9	8.1	9.0	11.5	.....	....
Breadth, blade of scapula	2.4	2.3	1.7	2.3	2.0	2.0	.....	....
Length of humerus	27.0	26.7	19.6	30.7	23.4	28.3	23.4	23
Length of ulna	33.1	33.3	24.2	36.2	27.3	34.7	22.0	28
Depth, shaft of ulna	2.3	2.3	1.8	2.2	2.0	2.2	.....	....
Length (lesser), carpometacarpus	17.0	15.7	13.7	17.0	17.1	19.4	12.6	14
Length, alar phalanx 1 digit 2	9.0	8.4	7.9	7.9	8.3	10.1	5.9	7
Length of femur	24.5	22.4	18.6	32.1	21.4	27.9	18.0	17
Length of tibiotarsus	35.0	31.3	27.8	52.6	40.6	45.8	27.0	28
Length of tarsometatarsus	23.0	19.6	15.5	38.8	30.4	31.7	17.5	16

*Extinct

TABLE II

Palaeoscinius turdirostris compared with selected living and extinct avian species

Ratios of lengths	Proportions, in Per Cent							
	<i>Palaeoscinius turdirostris</i>	<i>Microscellus leucocephalus</i>	<i>Bombycilla cedrorum</i>	<i>Aphelocoma californica</i>	<i>Cinclus mexicanus</i>	<i>Ixoreus naevius</i>	<i>Palaospiza bella</i> *	<i>Laurillardia longirostris</i> *
Beak to skull	49	52	40	47	47	48	---	51
Sternal notch to sternum	34	46	43	33	36	40	---	---
Humerus to ulna	81	80	81	84	86	81	106	82
Femur to humerus	90	84	94	104	91	98	76	74
Femur to tibiotarsus	70	71	67	61	52	60	66	60
Tarsometatarsus to humerus	85	70	79	126	130	112	74	70
Tarsometatarsus to femur	93	83	83	120	142	113	97	94
Tarsometatarsus to tibiotarsus	65	62	55	73	74	69	64	57
Leg to wing	90	81	88	127	115	113	87	81

*Extinct

LEG AND FOOT BONES: Digits 2, 3 and 4 articulated forward on tarsometatarsus in a straight line, as typical for the Passeriformes; digit 1 articulated backward from well developed metatarsal 1, also as in Passeriformes; length of digits 1 and 4 approximately equal, digit 2 shorter, digit 3 longer; ungual of digit 1, 70 per cent of length of phalanx 1, digit 1; unguals for digits 2 and 4 short; tarsometatarsus 93 per cent of length of femur, 85 per cent of length of humerus; femur 90 per cent of length of humerus. No diagnostic contours of individual bones evident.

Measurements and proportions. — See Tables I and II.

DISCUSSION

Of all the elements described in the foregoing section, the sternum, scapula, and humerus seem to present characters of greatest phylogenetic significance at a possible family level. In the sternum, the combination of long, slender manubrium with short posterior notch bordered by broad lateral process does not occur in any of the living species examined. The short notch and strong lateral process occur in members of the Cinclidae and Corvidae, but in these families the manubrium is short and heavy. On the other hand, in the Pycnonotidae, Turdidae, Mimidae and others that have a long, slender manubrium, the posterior notch is deep and the lateral process slender. In the Bombycillidae the notch is long, but the bordering processes are strong; the manubrium in members of this family is fairly heavy although less so than in the Corvidae. The broad, flat blade of the scapula most closely resembles the condition found in *Microscelis* (Pycnonotidae) and *Aphelocoma* (Corvidae); the depressed area of the blade posteriorly is most closely approximated in the first-named family. The humerus shows closest resemblance to that of *Microscelis*, particularly in the shape, position and length of the pectoral crest, anconal thrust of the head, and absence of undercut below the head. *Bombycilla* is somewhat similar, but the pectoral crest is short. Most of the passeriform species examined show a marked depression below the head. Representatives of the Alaudidae, Pycnonotidae, Bombycillidae and Corvidae lack this deep undercutting and resemble the fossil in this respect.

The thrushlike bill and the relatively short legs, while notable characteristics of *Palaeoscinis turdirostris*, are considered to be of no more than generic or specific value. Of the living oscine species examined in which the leg is found to be shorter than the wing, the following resemble *Palaeoscinis* in having the tarsometatarsus shorter than the

femur: *Bombycilla cedrorum* (Bombycillidae), *Saroglossa madagascariensis* (Sturnidae), *Bias musicus* (Muscicapidae), and the three available species of *Microscelis* (Pycnonotidae), *M. amaurotis*, *M. leucocephalus* and *M. madagascariensis*. None of the present authorities on passerine taxonomy suggest close relationship between all four of the families represented.

In my opinion, *Palaeoscenis* does not fit clearly into any one family of living oscine birds as now defined. Closest similarities in the significant characters above mentioned are found in the Pycnonotidae, Bombycillidae, Corvidae and Cinclidae.

Among the fossil passerines of North America, all but one are assignable to living families. The excepted species, *Paleospiza bella* Allen, is the single representative of the extinct family Paleospizidae, placed taxonomically near the Alaudidae. *Paleospiza* came from the Florissant shales of Colorado, of Oligocene age. It, like *Palaeoscenis*, is preserved in two rock slabs, with nearly the entire skeleton represented. The bill, however, is missing. Careful comparison of *Palaeoscenis* has been made with the description and illustrations of *Paleospiza* offered by Wetmore (1925, pp. 185-191 and plates 1-4). See Table III. Unfortunately none of the characters of the sternum, scapula or humerus that are considered of probable family significance in *Palaeoscenis* have been described in detail for *Paleospiza*. In fact it is doubtful that these significant areas are discernible in the Colorado specimen. However, other characters, such as the short, broad furcula, the heavily built wing bones, and possibly the very long distal phalanx of alar digit 2, seem to be equally as distinctive as family characters of the Paleospizi-

TABLE III

Comparison of *Palaeoscenis turdirostris* and *Paleospiza bella*

<i>Palaeoscenis turdirostris</i>	<i>Paleospiza bella</i>
Bones of wing long and slender	Bones of wing strong and heavy
Humerus shorter than ulna	Humerus slightly longer than ulna
Pectoral crest of humerus extending distally below level of bicipital crest	Pectoral crest of humerus not extending distally below level of bicipital crest
Phalanx 2 of alar digit 2 less than $\frac{1}{2}$ the length of the carpometacarpus	Phalanx 2 of alar digit 2 nearly $\frac{1}{2}$ the length of carpometacarpus
Furcula long, with slender symphysis	Furcula short and broad
Pedal digit 2 shortest	Pedal digit 1 shortest

dae. In no way, except for the relatively short legs, do *Palaeoscinis* and *Paleospiza* bear any resemblance to each other. Assignment of *Palaeoscinis* to the family Paleospizidae is therefore not justified.

Among the European fossil passerines, only three Tertiary species suggest similarity to *Palaeoscinis*. All of these are assigned to the genus *Laurillardia* and come from the Upper Eocene of France. Their preservation is similar to that of *Palaeoscinis* so that comparisons are facilitated. *Laurillardia longirostris* Milne-Edwards (1869-1871, p. 374) was originally placed with the Oscines with not attempt at family allocation. *Laurillardia parisiensis* and *L. munieri* were described by Flot (1891). Flot reviewed all three species of *Laurillardia* and concluded that the closest similarity was to be found with the Turdidae except for the fact that the legs of the fossil birds were much shorter than those of the thrushes. In *Saroglossa madagascariensis* (Family Sturnidae) he found a combination of characters similar to those of *Laurillardia*. According to Flot, *Saroglossa* appears to combine the habits of the Sturnidae with the characters of the Turdidae, differing from either, however, in its short legs.

Comparison of *Palaeoscinis* has been made with the three species of *Laurillardia* on the basis of descriptions and illustrations offered by Milne-Edwards (1869-1871, pp. 374-377 and pl. 161) and Flot (1891). This comparison demonstrates that *Laurillardia* bears a general similarity to *Palaeoscinis* in the length of the beak and in the relatively short legs, but differs in having a deeper (higher) upper mandible with greater dorsal curvature, and shorter femur and tarsometatarsus. These differences, together with the great discrepancy in age between the French and American birds, justify the recognition of the two distinct genera. As with *Paleospiza*, the detailed characters of the sternum, scapula and humerus that are considered of importance in *Palaeoscinis* are not discussed for *Laurillardia*.

The family allocation of *Laurillardia* has not been precisely defined although both the Turdidae and the Sturnidae were mentioned (Flot, 1891). The comparison with *Saroglossa madagascariensis* referred mainly to the similar proportions of short legs and long wings, proportions that, as mentioned above, are of questionable phylogenetic value. Assignment of *Palaeoscinis* to either the Turdidae or the Sturnidae is contra-indicated.

Inasmuch as *Palaeoscinis* cannot be assigned to any established family of birds either living or extinct, the family Palaeoscinidae is hereby proposed to contain it.

Family Palaeoscinidae

Type. — *Palaeoscinis turdироstris* Howard.

Diagnosis. — Sternum with long, slender manubrium, and short sternal notch bordered by broad posterior lateral process; scapula with broad blade near the articulation; humerus lacking undercut below head, head bent anconally and pectoral crest high proximally with respect to head, pectoral crest flaring proximally and distally and depressed in middle. Other characters as for the type species so long as it remains the sole representative of the family.

Relationships. — Determination of the taxonomic position of this family within the suborder Oscines is rendered difficult in the light of the uncertainties that exist concerning relationships of living passerine families. It has been stated above that closest similarities of the fossil lie with members of the families Pycnonotidae, Bombycillidae, Corvidae and Cinclidae. Within the last six years, at least three publications of importance have provided studies of the taxonomy of the Passeriformes. Wetmore (1951, p. 12) states that his arrangement "is in part necessarily arbitrary, through the easily perceptible and often remarked fact that we are under necessity of listing groups in linear order . . . when actually they stand in three-dimensional relationship to one another." Of the four families with which *Palaeoscinis* may be most closely compared, he (*op. cit.* p. 121) lists the Corvidae 6th among oscine families, the Pycnonotidae 18th, the Cinclidae 19th and the Bombycillidae 29th. Mayr and Greenway (1956, pp. 8-9) present the sequence of oscine families as approved by a committee appointed by the XI International Ornithological Congress. In this listing the Pycnonotidae appear 5th in the sequence, the Bombycillidae 10th, Cinclidae 11th and Corvidae last (40th). Beecher (1953) bases his conclusions regarding relationships of the passerines on anatomical studies and presents a chart showing a radiating arrangement. He places the four groups above-mentioned in the same superfamily and suggests (*op. cit.* p. 286) that the Bombycillidae and Corvidae "appear traceable to the bulbuls, here regarded as a specialized branch (Pycnonotinae) of the Sylviidae." It would be beyond the scope of the present paper to discuss the relative merits of the passerine sequences presented in these three publications. The characters of *Palaeoscinis turdироstris*, however, do appear to provide some substantiating evidence of an ancestral relationship between the bulbuls, waxwings and corvids, and possibly the dippers as well. In a linear arrangement, the placement of

the Palaeoscinidae near the Pycnonotidae or the Bombycillidae must suffice until the relationships of the living forms have been more fully determined.

SUMMARY

A new species of passerine bird, *Palaeoscinis turdirostris*, is described from the Miocene of Tepusquet Creek, Santa Barbara County, California. Beak and body proportions resemble some of the thrushes, but the legs are relatively much shorter, and a number of skeletal details distinguish the fossil from all existing families of birds. The species is placed in the suborder Oscines, and the family Palaeoscinidae is established to contain it. Closest affinities of the Palaeoscinidae lie with the Pycnonotidae, Bombycillidae, Corvidae and Cinclidae.

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